Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) In reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target,

a data transfer method for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said initiator; and

for each said logical record that meets a predetermined batch transfer condition, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target upon correct reception of said logical record.

2. (original) In reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target,

a data transfer method for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

each said logical record is transferred by a transfer request issued by said initiator and, upon correct arrival of the record on said target, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target;

said initiator confirms said transfer status at every said batch transfer; and

if said target detects a transfer error of said logical record in the middle of said batch transfer by said error check code, said target negates the reception of and stops posting said completion status of the logical record and subsequent logical records until said batch transfer terminates.

3. (original) In reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer

status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target,

a data transfer method for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

when each said logical record transferred by a transfer request issued by said initiator arrives correctly on said target, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target; and

if said target detects a transfer error of said logical record in the middle of said batch transfer by said error check code, said target negates the reception of and stops posting said completion status of the logical record and subsequent logical records that are not permitted for reception by a value specified in a batch transfer condition field until said batch transfer terminates.

4. (original) The data transfer method as recited in claim 1, wherein, if one or more transfer errors are detected during said batch transfer between said initiator and said target, said target includes the ID of the earliest logical record in which a transfer error has been detected in said transfer status which is confirmed at every said batch transfer; and

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said initiator starts a transfer retry from the logical record in which the transfer error occurred, based on said transfer status.

5. (original) The data transfer method as recited in claim 1, wherein, if one or more transfer errors are detected during said batch transfer between said initiator and said target, said target includes a list of the IDs of the logical records in which a transfer error has been detected in said transfer status which is confirmed at every said batch transfer; and

said initiator reties transfer of the logical records in which the transfer error occurred, based on said list.

6. (original) The data transfer method as recited in claim 1, wherein, in the middle of said batch transfer, said initiator or said target can stop said batch transfer by issuing a cancel request.

7. (currently amended) A disk control unit comprising a plurality of host interface units interfacing with a host computer and a plurality of disk interface units interfacing with disk drive equipment, each said host interface unit including a memory for temporary storage of data that said host computer reads or writes, wherein data transfer is performed between said memory and said host computer, each said disk interface unit including a cache memory for temporary storage of data that said disk drive equipment reads or writes, wherein data transfer is performed between said memory and said disk drive equipment,

wherein a data transfer method

which;~which, in reliable data transfer in which, when data is

transferred from an initiator to a target, the data received by said target

is checked for a communication error by using an error check code

attached to said data, a transfer status indicating whether said

communication error occurs is returned from said target to said initiator,

and, if a transfer error occurring during said data transfer is detected by

said transfer status, said initiator retries to transfer said data to said

target, is for logical records that are units of said data transfer between

said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said

initiator; and

for each said logical record that meets a predetermined batch transfer

condition, said target posts a completion status corresponding to said transfer

request for said logical record to a completion queue existing in said target upon

correct reception of said logical record;~record;

is applied to data transfer between said plurality of host interface units and

said plurality of disk interface units.

8. (currently amended) A disk control unit comprising a plurality of host

interface units interfacing with a host computer and a plurality of disk interface units

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interfacing with disk drive equipment, each said host interface unit including a

memory for temporary storage of data that said host computer reads or writes,

wherein data transfer is performed between said memory and said host computer,

each said disk interface unit including a cache memory for temporary storage of data

that said disk drive equipment reads or writes, wherein data transfer is performed

between said memory and said disk drive equipment,

wherein a data transfer method,

~~which;,~~ which, in reliable data transfer in which, when data is

transferred from an initiator to a target, the data received by said target

is checked for a communication error by using an error check code

attached to said data, a transfer status indicating whether said

communication error occurs is returned from said target to said initiator,

and, if a transfer error occurring during said data transfer is detected by

said transfer status, said initiator retries to transfer said data to said

target, is for logical records that are units of said data transfer between

said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said

initiator; and

for each said logical record that meets a predetermined batch transfer

condition, said target posts a completion status corresponding to said transfer

request for said logical record to a completion queue existing in said target upon

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correct reception of said logical ~~record,~~record;

is applied to data transfer across said plurality of host interface units.

9. (currently amended) A disk control unit comprising a plurality of host interface units interfacing with a host computer and a plurality of disk interface units interfacing with disk drive equipment, each said host interface unit including a memory for temporary storage of data that said host computer reads or writes, wherein data transfer is performed between said memory and said host computer, each said disk interface unit including a cache memory for temporary storage of data that said disk drive equipment reads or writes, wherein data transfer is performed between said memory and said disk drive equipment,

wherein a data transfer method,

~~which,,~~which, in reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target, is for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

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each said logical record is transferred by a transfer request issued by said initiator; and

for each said logical record that meets a predetermined batch transfer condition, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target upon correct reception of said logical ~~record;~~record;

is applied to data transfer across said plurality of disk interface units.

10. (currently amended) A disk control unit comprising a plurality of host interface units interfacing with a host computer, a plurality of disk interface units interfacing with disk drive equipment, a plurality of memory units, and a plurality of processor units, wherein said host interface units in conjunction with said processor units perform data transfer between said memory units and said host computer and said disk interface units in conjunction with said processor units perform data transfer between said memory units and said disk drive equipment,

wherein a data transfer method,

~~which;~~which, in reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said

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target, is for logical records that are units of said data transfer between

said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said

initiator; and

for each said logical record that meets a predetermined batch transfer

condition, said target posts a completion status corresponding to said transfer

request for said logical record to a completion queue existing in said target upon

correct reception of said logical ~~record;~~record;

is applied to data transfer between said plurality of host interface units or said

plurality of disk interface units and said memory units.

11. (currently amended) A disk control unit comprising a plurality of host

interface units interfacing with a host computer, a plurality of disk interface units

interfacing with disk drive equipment, a plurality of memory units, and a plurality of

processor units, wherein said host interface units in conjunction with said processor

units perform data transfer between said memory units and said host computer and

said disk interface units in conjunction with said processor units perform data

transfer between said memory units and said disk drive equipment,

wherein a data transfer method,

~~which;~~ which, in reliable data transfer in which, when data is

transferred from an initiator to a target, the data received by said target

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is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target, is for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said initiator; and

for each said logical record that meets a predetermined batch transfer condition, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target upon correct reception of said logical ~~record;,~~record;

~~is applied to data transfer between said~~

is applied to data transfer between said plurality of host interface units or said plurality of disk interface units and said processor units.

12. (currently amended) A disk control unit comprising a plurality of host interface units interfacing with a host computer, a plurality of disk interface units interfacing with disk drive equipment, a plurality of memory units, and a plurality of processor units, wherein said host interface units in conjunction with said processor

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units perform data transfer between said memory units and said host computer and said disk interface units in conjunction with said processor units perform data transfer between said memory units and said disk drive equipment,

wherein a data transfer method,

which;,which, in reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target, is for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said initiator; and

for each said logical record that meets a predetermined batch transfer condition, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target upon correct reception of said logical record;,record;

—————is applied to data transfer between said

is applied to data transfer between said plurality of memory units and said plurality of

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processor units.

13. (currently amended) A disk control unit comprising a plurality of host interface units interfacing with a host computer, a plurality of disk interface units interfacing with disk drive equipment, a plurality of memory units, and a plurality of processor units, wherein said host interface units in conjunction with said processor units perform data transfer between said memory units and said host computer and said disk interface units in conjunction with said processor units perform data transfer between said memory units and said disk drive equipment,

wherein a data transfer method,

~~which;,~~ which, in reliable data transfer in which, when data is transferred from an initiator to a target, the data received by said target is checked for a communication error by using an error check code attached to said data, a transfer status indicating whether said communication error occurs is returned from said target to said initiator, and, if a transfer error occurring during said data transfer is detected by said transfer status, said initiator retries to transfer said data to said target, is for logical records that are units of said data transfer between said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said initiator; and

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for each said logical record that meets a predetermined batch transfer

condition, said target posts a completion status corresponding to said transfer

request for said logical record to a completion queue existing in said target upon

correct reception of said logical ~~record;~~ record;

~~is applied to data transfer between said~~

is applied to data transfer across said plurality of memory units.

14. (currently amended) A disk control unit comprising a plurality of host

interface units interfacing with a host computer, a plurality of disk interface units

interfacing with disk drive equipment, a plurality of memory units, and a plurality of

processor units, wherein said host interface units in conjunction with said processor

units perform data transfer between said memory units and said host computer and

said disk interface units in conjunction with said processor units perform data

transfer between said memory units and said disk drive equipment,

wherein a data transfer method,

~~which;,~~ which, in reliable data transfer in which, when data is

transferred from an initiator to a target, the data received by said target

is checked for a communication error by using an error check code

attached to said data, a transfer status indicating whether said

communication error occurs is returned from said target to said initiator,

and, if a transfer error occurring during said data transfer is detected by

said transfer status, said initiator retries to transfer said data to said

target, is for logical records that are units of said data transfer between

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said initiator and said target, whereby:

a plurality of said logical records in a block are batch transferred;

said initiator confirms said transfer status at every said batch transfer;

each said logical record is transferred by a transfer request issued by said initiator; and

for each said logical record that meets a predetermined batch transfer condition, said target posts a completion status corresponding to said transfer request for said logical record to a completion queue existing in said target upon correct reception of said logical ~~record;,~~record;

~~is applied to data transfer between said~~

is applied to data transfer across said plurality of processor units.

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